CLAIMS

What is claimed is:

1. A read-only recording medium on which information has been prerecorded, comprising:

a substrate having the information recorded on a surface thereof;

a reflective layer formed of a phase change material on the substrate;

a first dielectric layer formed on the reflective layer; and

a mask layer formed of metal oxide on the first dielectric layer.

2. The recording medium of claim 1, further comprising a second dielectric layer interposed between the substrate and the reflective layer.

3. The recording medium of claim 1, wherein the mask layer contains nanoparticles of metal.

4. The recording medium of claim 1, wherein the metal oxide forming the mask layer is a noble metal oxide.

5. The recording medium of claim 4, wherein the noble metal oxide is one selected from the group consisting of platinum oxide (PtO_x), gold oxide (AuO_x), silver oxide (AgO_x), and palladium oxide (PdO_x).

6. The recording medium of claim 1, wherein the metal oxide is a metal oxide with a high melting point.

7. The recording medium of claim 6, wherein the metal oxide is tungsten oxide (WO_x).

8. The recording medium of claim 1, wherein the phase change material forming the reflective layer is one selected from the group consisting of a compound of silver, indium, antimony, and tellurium (AgInSbTe or AIST); carbon (C); a compound of germanium, antimony, and tellurium (GeSbTe); germanium (Ge); tungsten (W); titanium (Ti); silicon (Si); manganese (Mn); aluminum (Al); bismuth (Bi); nickel (Ni); palladium (Pd); and tellurium (Te).

9. The recording medium of claim 1, wherein the information is recorded in the form of marks formed on the surface of the substrate.

10. The recording medium of claim 1, wherein the thicknesses of the mask layer, the first dielectric layer, and the reflective layer are in the ranges of 1.5 to 10.0 nm, 10 to 60 nm, and 10 to 80 nm, respectively.

11. The recording medium of claim 1, further comprising a third dielectric layer formed on the mask layer.

12. The recording medium of claim 1, wherein the information is read from the substrate surface or from an information surface.

13. The recording medium according to claim 1, wherein the phase change material has a melting point between 400°C and 900°C.

14. The recording medium according to claim 1, wherein the mask layer is formed by reactive sputtering.

15. The recording medium according to claim 14, wherein the mask layer is reduced by reactive ion etching.

16. A method of optically reading information recorded on the read-only recording medium according to claim 1, wherein the power of a laser beam illuminating the recording medium is in the range of 1.5 to 4.5 mW.

17. The method of claim 16, wherein the recording medium is illuminated from a substrate side by the laser beam.

18. The method of claim 16, wherein the recording medium is illuminated from an information side by the laser beam.

19. A reproducing apparatus for optically reading information recorded on the read-only recording medium according to claim 1, wherein the power of a laser beam illuminating the recording medium is in the range of 1.5 to 4.5 mW.

20. A method of forming a read-only recording medium on which information has been prerecorded, comprising:

forming a reflective layer of a phase change material on a substrate;

forming a first dielectric layer on the reflective layer; and

forming a mask layer of metal oxide on the first dielectric layer.

21. The method of claim 20, further comprising forming a second dielectric layer between the substrate and the reflective layer.

22. The method of claim 20, wherein the mask layer contains nanoparticles of metal.

23. The method of claim 20, wherein the metal oxide forming the mask layer is a noble metal oxide.

24. The method of claim 23, wherein the noble metal oxide is one selected from the group consisting of platinum oxide (PtO_x), gold oxide (AuO_x), silver oxide (AgO_x), and palladium oxide (PdO_x).

25. The method of claim 20, wherein the metal oxide is a metal oxide with a high melting point.

26. The method of claim 25, wherein the metal oxide is tungsten oxide (WO_x).

27. The method of claim 20, wherein the phase change material forming the reflective layer is one selected from the group consisting of a compound of silver, indium, antimony, and tellurium (AgInSbTe or AIST); carbon (C); a compound of germanium, antimony, and tellurium (GeSbTe); germanium (Ge); tungsten (W); titanium (Ti); silicon (Si); manganese (Mn); aluminum (Al); bismuth (Bi); nickel (Ni); palladium (Pd); and tellurium (Te).

28. The method of claim 20, wherein the information is recorded in the form of marks formed on the surface of the substrate.

29. The method of claim 20, wherein the thicknesses of the mask layer, the first dielectric layer, and the reflective layer are in the ranges of 1.5 to 10.0 nm, 10 to 60 nm, and 10 to 80 nm, respectively.

30. The method of claim 20, further comprising forming a third dielectric layer on the mask layer.